



Imperial Bioengineer

August 2015

INNOVATING EXCELLENCE

by Dr Jenna Stevens-Smith, Outreach Manager

At the interface of engineering and healthcare, bioengineering is perfectly placed to deliver innovations which will have real impact on people's lives.

August has been a particularly good month for innovation news.

The Department is pleased to announce that Stent Tek, a startup founded by Sorin Popa and Dr. Rob Dickinson, has received £1m in seed funding from the UK's i4i programme. The company was founded based on technology developed in the Department's masters programme in medical device entrepreneurship. Popa was a part of the first cohort of students in this programme in 2013. Stent Tek is developing catheter-based technology to create vascular access sites for haemodialysis patients, which aims to address a potential worldwide annual market of over US\$1 billion.

Invention for Innovation (i4i) is a translational funding scheme to advance healthcare technologies and interventions for increased patient benefit in areas of existing or emerging clinical need. Due to his work on Stent Tek, Sorin has been selected as one of four finalists for the Royal Academy of Engineering Launchpad competition.

Imperial Innovations has announced the launch of Orthonika, a spinout company from Imperial College London that is developing a novel knee meniscus replacement, MenisciKnit. Orthonika has been launched through Co.Create, the company formation unit of Imperial Innovations, with initial seed-funding of £150,000 raised by Sierra MedTech from a group of angel investors. Meniscal tearing is a very-common injury and often leads to severe pain, restricted movement, and osteoarthritis. Professor Anthony Bull is a co-inventor.



On the left: Professor James Moore Jr & Sorin Popa
On the right: CustoMem founders- Henrik Hagemann (Bioengineering), Despoina Paschou (Bioengineering), Gabriella Santosa (Life Sciences)

Synthetic biology based start-up, CustoMem, was one of three successful student teams selected to take part in **IP Wise Up 2015**. Funded by the Intellectual Property Office StudentsHIP Enterprise Awards, the IP Wise Up initiative has been launched by Imperial for the first time this year to encourage the practical application of Intellectual Property (IP) skills by undergraduate students.

CustoMem is made up of Henrik Hagemann (Bioengineering), Despoina Paschou (Bioengineering), Gabriella Santosa (Life Sciences). The team will also take part in Lean LaunchPad which is due to start in September. The full story can be found on the College's news pages.

If, like CustoMem, you have an idea, technology or venture that would benefit from the support of SynbiCITE then why not apply for Lean LaunchPad. Applications are now open and all the details are available on **our website** or you can contact **Steve Chambers**, CEO of SynbiCITE, for more information.

You can watch a video about our most recent Lean LaunchPad programme on **SynbiCITE's YouTube channel**.

WELCOME TO THE DEPARTMENT

Welcome to **Laura McKay** who has rejoined the Department as Department Secretary.

Sadly this month we are saying goodbye to a number of colleagues.

Dr James Field now working full-time as CEO & Co-founder of LabGenius.

Dr Theofano Eftaxiopoulou who has gone onto a consultancy role.

Dr Mariea Brady who has gone on to study Medicine at Oxford.

Dr Barbara Skene after 7 years in the Department as Operations Manager of Centre of Synthetic Biology and Innovation will be retiring.

Thanks to all four, you will be missed.

PUBLICATION SPOTLIGHT

Be sure to check out the Department's recently published works below:

Benjamin Almquist, Steven Castleberry, Julia Sun, Alice Y. Lu and Paula T. Hammond **Combination Growth Factor Therapy via Electrostatically Assembled Wound Dressings Improves Diabetic Ulcer Healing In Vivo** Advanced Healthcare Materials August 2015 doi: 10.1002/adhm.201500403

Andre Pereira, Behzad Javaheri, Andrew Pitsillides and Sandra J Shefelbine **Predicting cortical bone adaptation to axial loading in the mouse tibia** Journal of The Royal Society Interface 08/2015; 12(110). DOI: 10.1098/rsif.2015.0590

CSynBI and SynbiCITE UPDATE

by Dr Helen Findon, Outreach & Communications Manager, CSynBI



Prof. Dick Kitney and Dr John Cumbers, Founder of SynBioBeta, signing the partnership agreement

It might be summer but it has been another busy month for Synthetic Biology at Imperial. We are delighted to announce that, thanks to a new partnership between SynbiCITE and Synbiobeta, Imperial College London will be **hosting Synbiobeta London 2016**.

Synbiobeta is the world's preeminent synthetic biology industry conference series. At both its London & San Francisco conferences Synbiobeta showcases companies that are turning cutting edge synthetic biology research into marketable goods and services. Both SynbiCITE and Synbiobeta are dedicated to advancing synthetic biology both as a scientific and as a commercial endeavour, advancing our society and strengthening our economy.

We know that the best way to pursue that goal is by supporting researchers and entrepreneurs in commercialising their research through programmes such as the Lean LaunchPad.

We were also pleased to announce this month that Prokarium Ltd, a biotechnology company developing transformational oral vaccines, will receive new funding from SynbiCITE.

The £498k project is funded at £377k from SynbiCITE and £121k from Prokarium and will enable Prokarium and its collaborator Prof Robin Shattock of Imperial College to complete the pre-clinical development of an innovative Chlamydia vaccine which could enter clinical trials in 2017.

CHANGES IN TECHNICAL SUPPORT

There have been a number of changes in the technical support team this month with Shanas Choudhury returning from Maternity leave following the birth of her baby daughter Aiyala. Shanas will return to her role managing our Tissue Culture and microscopy laboratories.

Jed McDonald (Shanas' maternity cover) has successfully secured a 2 year technical post in the department. This is a new post created by the Biomedical Engineering Research Hub project to free a proportion of time for Ken Keating to work as the Faculty of Engineering user coordinator for the project. Jed will be taking on work from Ken in various areas, including:

- Laboratory infrastructure, defects and minor works
- Central service agreements
- Planned preventative maintenance & liaising with the cleaners
- Permits to work and guest card allocation
- Some systems of work including intranet maintenance, as well as the development of new and improved systems
- Looking after safety systems including waste disposal, clinical waste tag allocation and routine laboratory inspections.

You can find Jed, Shanas and Marta in the technicians office RSM3.19.

OUT AND ABOUT

Professor Etienne Burdet gave a plenary lecture on "interactive control in humans and for robots" at the **International Conference on Intelligent Robotics and Applications (ICIRA2015)** in Portsmouth on August 26.

PhD student **Gavin Metcalf** (Ladame Lab) presented his research on Novel fluorogenic PNA biosensors for detection of microRNAs as an early cancer diagnostic tool at Hammersmith Hospital.

ENGINEERING SUMMER SCHOOL

By Anna Menzel, 12 years old



I was one of the lucky girls to take part in the Imperial Engineering Summer School from Monday 20th July to Saturday 25th July. I found that the workshop was a fun and useful experience. It really opened my eyes to see how exciting and interesting all the different parts of engineering are.

We went through 9 disciplines of engineering in that week, one per half day. My favorite parts of the week were:

i) the lectures: here Imperial researchers and engineers explained to us what we were going to learn and what engineering topic we were focusing on for that day; as well as what Imperial researchers, engineers are doing and learning from it.

ii) the activities: where we all got stuck in, did some exciting hands on experiments and really learned how amazing and fun it is to work in that field of engineering whilst also seeing first hand Imperial's work in that area of engineering.

My personal favorite activities were the flight simulator and the foam room in aeronautics and the lecture at the end of the week. I enjoyed the flight simulator because it really gave you the experience of flying a plane and how hard it is. I loved the foam room because 1) it is a foam room 2) it's where the engineers fly the drones and 3) we got told about how planes fly and learnt about the physics, lift, weight, thrust and drag. We were also able to make cardboard airplanes and see how if we moved the wing just slightly it would either crash or not quite fly the same way and why that was.

For the lecture on Saturday we had to work in groups of 3 girls. Each group got one of the engineering topics and had to prepare a talk about it.

I found this fun because we could show how much we had learned and listened. We were also allowed to do a PowerPoint presentation which I really enjoyed. I was very excited because it was my first talk in a real lecture theater and hopefully not my last.

So, I truly recommend the Imperial Engineering Summer School to girls who are interested in engineering or even if you're not, give it a try and you'll probably fall in love with it just as I did. It was a great experience and I thoroughly enjoyed it.

UPCOMING EVENTS

Departmental Seminars

Thursdays 12.00-13.00

Back this week...

3 September 2015 12:00-13:00 RSM2.28

Professor Robert Nibbs from Glasgow University's Institute of Infection, Immunity and Inflammation

Detection and tracking of microbubbles for molecular imaging in oncology

15 September 2015 12:00-13:00 RSM3.03

Dr Katherine Fantauzzo from Department of Developmental and Regenerative Biology, Icahn School of Medicine at Mt Sinai, NY

Two sides of the same face: PDGF receptors in the neural crest

<http://www3.imperial.ac.uk/bioengineering/events/departmentalseminars>

Imperial Events

9 September Centre for Neurotechnology Research Symposium

13:00-17:00 CDT Suite, Level 4 ICSM Building

19-20 September BREATHE: Hackathon for Respiratory Wellbeing

09:00-19:00 Skempton Building, Imperial College London

24 September Imperial Fringe: Designs for life 17:00-20:00 Imperial Union Concert Hall, Beit Quad

25 September Imperial Robotics Forum: Showcase 09:00-19:00 RSM2.28, Imperial College London

30 September Centre for Neurotechnology Colloquium series

Professor John Duncan, University of Cambridge

Frontoparietal control systems in the assembly of cognitive episodes at 17:00, RSM 2.28.

External Events & Conferences

MEIbioeng15

7-8 September

Leeds, UK

<http://meibioeng.org/>

MPEC2015 (IPEM Medical Physics and Engineering Conference)

8 - 10 September

Liverpool, UK

<http://www.ipem.ac.uk/ConferencesEvents/MPEC.aspx>

BMES Annual Conference

7-10 October

Tampa, Florida

<http://bmes.org/annualmeeting>

STAFF & STUDENT SUCCESS

Congratulations to PhD student **Christoforos Charalambous** (BICV Group), who won the prize for "Best Poster Presentation" at the 6th IET Conference on Imaging for Crime Detection and Prevention, held in London, 15-17 July 2015. This study - at the boundary between biomechanics and biometrics - investigates how viewing angle affects the performance of identity recognition using a person's gait, particularly through the use of joint kinematics. Chris visualised how the accuracy of identity recognition varies with the spatial relationship between a security camera and the trajectory of a person captured using that camera. In addition, he showed how the accuracy of model-based gait recognition depends on the elevation angle of the camera, information which is likely to be useful for companies installing surveillance equipment. Chris's prize was sponsored by the IEEE.

Helena Topouzi, a PhD student in the Higgins Lab received a 600 Euro travel grant from the European Hair Research Society (EHRS), plus free registration, to attend and present her work on an 'In vitro model to resolve and evaluate hair inductive signalling networks', at the 9th World Congress for Hair Research being held in Miami, November 2015.

ALUMNI UPDATE

Bioengineering PhD Alum **Naveed Ejaz** was featured in *The Life in My Head: From Stroke to Brain Attack*, Episode 2 <http://bbc.in/1Mchv5s>

Sahil Chugani, BEng 2011 has been selected as one of the two people from the EU to take part in the EU/China entrepreneurial programme where over the next 15 months Sahil will complete a MBA while developing the necessary skills to start up a EU/China business.

CONTACT

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